

REMARKS

Claims 1 through 20 are in this application and are presented for consideration. By this amendment, Applicant has made changes to each of the independent claims. Specifically each of the independent claims highlights the novel combination of features according to the invention in which the solder material forming the spacing metallizations includes a non-melted part which is maintained during the bonding action based on a partial fusion of the metallization. It is Applicant's position that the prior art as a whole fails to teach or suggest this combination of features.

Applicant acknowledges the state of this application that joint inventors have been named. It is Applicant's representatives understanding that the subject matter was commonly owned at the time of the invention.

Claims 1-9, 12-15 and 17-20 have been rejected as being obvious based on Leicht et al. (U.S. 5,551,627) in view of Gotman (U.S. 4,404,453). The Examiner notes that Leicht discloses a basic bonding or fusion technique in which solder is supplied to terminals to form spacing metallizations and a first and second substrate are bonded together. The rejection notes that Leicht et al. fails to teach and fails to suggest partially fusing the solder with laser energy.

The Gotman reference has been cited for disclosing laser energy to melt solder.

It is Applicant's position that Gotman does not teach or suggest several aspects of the invention as claimed and that the combination of features should be considered novel and unobvious even combining the teachings of Gotman and Leicht et al.

Applicant's clarified claims highlight that the melting takes place during bonding or during contact or fusion of the solder material with the contact area of the second substrate. Specifically, it is noted as correctly pointed out by the Examiner, that the Gotman process does not suggest the inventive process with respect to the partial melting or fusion of the solder material taking place during the contact or bonding. Gotman discloses initiating melting of solder material (solder globules 22) "before the contact occurs" (see column 3, lines 19-22) with respect to the process illustrated in Figure 1. With regard to the process illustrated in Figure 2 and referred to at column 4, line 17-31, melting action takes place before the contact pairs come into engagement. Clearly Gotman fails to teach and fails to suggest providing a non-melted part during contact so as to provide a spacing. There is no spacing function during the bonding or engagement phase of either method taught by Gotman.

According to the invention, there is a spacing achieved with particular techniques, during the bonding or contact portion of the process. The solder material forming spacing metallizations is maintained during the bonding action performed by means of a partial fusion of the spacing metallization (see page 6, last paragraph and page 7, lines 1-5). As highlighted in each of the claims, the partial melting with resulting partial fusion leaves an essential part of the spacing metallization in a solidified state for spacing. This is a particular method step with a particular result wherein this is not suggested and not taught by the prior art as a whole. According to the invention it is clear that the partial melting takes place during bonding and not before bonding as occurs with the Gotman process. The claims have been worded to correctly and clearly point this out. Further, since the melting action according to Gotman

(according to each process disclosed) starts before the substrates come into contact with one another and this melting is continued upon contact between the substrates, there cannot be any spacing function of the soldered globules. Most notably, there is no teaching of a partial fusion as claimed, namely there is no teaching of melting a portion while maintaining another portion in a solid state and providing this melting during the fusion or contact stage of the process.

It is Applicant's position that Applicant's claims highlight features which are clearly neither taught nor suggested by the prior art. The invention as specified in the claims not only requires a partial melting but also requires this partial melting during a contact or fusion step with a non-melted part being maintained during this contact or fusion step. This results in the partial fusion as claimed with the spacing based on the maintained solid portion.

Applicant respectfully requests that the Examiner reconsider the rejections in view of the revised claims.

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DATED: July 1, 2004
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